Project ECHO

Extension for Community Healthcare Outcomes

University of New Mexico Health Sciences Center

Marina del Rey, April 10, 2014

Bruce Baird Struminger, MD, MA, FACP
Associate Director, Project ECHO
Assoc Prof of Medicine, Div of Infectious Diseases
bstruminger@unm.edu
The Project ECHO® mission:

• improve access to safe and effective care for common, complex, chronic diseases among rural and underserved populations by developing local specialty care capacity

• monitor outcomes

Project ECHO is a platform for practice–based education, service delivery, and outcomes research.

Supported by New Mexico Department of Health, Agency for Health Research and Quality, New Mexico Legislature, the Robert Wood Johnson Foundation and the GE Foundation.
The History of Project ECHO
HCV: A Global Health Problem
Over 170 million carriers worldwide, 3-4 million new cases/year

Source: WHO 1999
New Mexico

• Overall population 2 million
• Estimated number of HCV infected persons is greater than 35,000 [1.75% prevalence]
• In 2004, less than 5% of cases had been treated
• HCV is ten times more prevalent than HIV in NM
Hepatitis C

Treatment

**Good** news

- Curable in 70% of cases

**Bad** news

- Severe side effects:
  - anemia (100%)
  - neutropenia >35%
  - depression >25%
- No primary care physicians in NM treating HCV
Initial Goal of Project ECHO®

Develop health workforce capacity to safely and effectively treat HCV in all areas of New Mexico and to monitor outcomes.
Methods

- Use Technology (multipoint videoconferencing and Internet) to leverage scarce healthcare resources
- **Disease Management Model** focused on improving outcomes by reducing variation in processes of care and sharing “best practices”
- **Case-based learning**: Collaborative management of patients with UNM specialists (learning by doing)
- HIPAA compliant web-based database to monitor outcomes

Steps

- Train—via practice-based medical consultation and education—physicians, mid-level providers, nurses, pharmacists, educators in HCV care and treatment
- Conduct telehealth clinics — “Knowledge Network”
- Initiate collaborative management — “Learning Loops”
- Use web based software — “iHealth”
- Collect data and monitor outcomes centrally
- Assess cost and effectiveness of programs
ECHO Telehealth vs. Telemedicine

**ECHO Telehealth**
- ECHO Supports Community Based Primary Care Teams

**Traditional Telemedicine**
- Specialist Manages Patient Remotely

Patients reached with specialty knowledge & expertise
Western States Consortium HCV ECHO Partner Sites

Number of Sites in one location (city):

University of New Mexico
21 Partner Sites:
New Mexico
Arizona
Montana

University of Washington
20 Partner Sites:
Washington
Alaska
Idaho
Oregon
Montana

University of Utah
35 Partner Sites:
Utah
California
Colorado
Idaho
Montana
Wyoming

St. Joseph’s Hospital, AZ
18 Partner Sites:
Arizona

*Frontier Counties are defined as those counties with a population density of less than 7 persons per square mile

http://www.raconline.org/racmaps/mapfiles/frontier.png
Hepatitis C Community TeleECHO™ Clinic

Wednesday, January 15, 2014
3:00 to 5:00 PM MDT

ECHOcall™ https://join.loopup.com/4vOqbGW
Telephone 1 (877) 746-4263 and enter the Pin: 0222572#.
Video IP 64.234.191.5##1000

Didactic Presentation Speaker
Sanjeev Arora, MD
Director, Project ECHO
UNM Health Sciences Center

Didactic Topic
"Alternative Therapies for Genotypes 1 & 3"

Didactic Presentation
Link to handout will be sent when available
HCV Screening/Initial Presentation

Presentation Date: __________ Site: __________ Clinician: __________

Name/ECHO ID: __________ Age: __________ DOB: __________ Gender: M/F

Main Question: __________

Race: American Indian, Alaska Native / Asian / Black, African American / Native Hawaiian, Pacific Islander / White

Hispanic or Latino: Yes / No Health Insurance: □ None □ Medicaid □ Medicare □ Other

Country of Origin: □ USA □ Mexico □ Other

Suspected Route of HCV Transmission (check all that apply)

☐ Current or former injection drug user (even once)
☐ Recipient of clotting factor concentrates made before 1987
☐ Blood transfusion or solid organ transplant before July 1992
☐ Needlestick injury in healthcare setting
☐ Birth to an HCV-infected mother
☐ Sex with an HCV-infected person
☐ Sharing contaminated personal items, such as razors or tooth brushes with an HCV infected person
☐ Unprofessional tattoo
☐ Unknown
☐ Other: __________________________

Medical Diagnoses (check all that apply)

☐ HCV - Date Of Diagnosis: __________
☐ Coronary Artery Disease
☐ Diabetes Mellitus - Baseline ophthalmologic exam for retinopathy needed within the last 12 months
☐ Hypertension
☐ Cerebrovascular Disease - Last CVA Date: __________
☐ Peripheral Vascular Disease
☐ Hyperlipidemia
☐ Hyperthyroidism
☐ Hypothyroidism
☐ Autoimmune Disease - Type: __________
☐ Chronic Renal Insufficiency
☐ Asthma
☐ COPD
☐ Chronic Pain
☐ Peripheral Neuropathy
☐ Seizure Disorder
☐ Brain Injury
☐ HIV/AIDS
☐ Cancer – Date and Type: __________: Type of treatment: Chemotherapy / Surgery / Radiation
☐ Solid Organ Transplant
☐ Gout
☐ Other: __________________________

ECHO Fax: 505-272-6906 HCV Clinic Coordinator: 505-925-7754 rev. 9/19/11
HCV Screening/Initial Presentation  p. 2 of 3

Liver Related History (check all that apply)
- Chronic Hepatitis B
- Cirrhosis
- Ascites
- Esophageal Varices - Upper GI bleed secondary to varices? Yes/No Date:___________
- Hepatic Encephalopathy
- Previous Hep C Treatment – Date, Drug regimen, and tx duration:________________________
- Liver biopsy

Miscellaneous History
Patient or partner planning pregnancy: Yes / No
Patient or partner using contraception: Yes / No / NA ; Type(s) Of Contraception:__________

Hepatitis Immunity/ Vaccinations (check all that apply)
- Hepatitis B: Immune / Vaccinated - Date 1:___________ Date 2:___________ Date 3:___________
- Hepatitis A: Immune / Vaccinated - Date 1:___________ Date 2:___________
- Pneumovax - Date:________________________
- Influenza - Date(s) :_______________________

Psychiatric Diagnoses (check all that apply)
- Depression - On medication? Yes / No
- Anxiety - On medication? Yes / No
- Mania/Hypomania - On medication? Yes / No
- Suicidal behavior/Self harm - No. of attempts:___________ Date of last attempt:___________
- Hospitalization for psychiatric reasons - Date of last hospitalization:______________________
- Undergoing psychotherapy/counseling

PHQ-9 Score:____________

Substance Use History
Alcohol (One standard drink = 12 oz. beer, 5 oz. wine, or 1.5 oz. of 80-proof spirits)
Does patient drink alcohol currently? Yes / No Date of last drink:________________
- Number of days per week that patient drinks:____________
- Number of drinks patient has on a typical drinking day:____________
If non-drinker, has the patient ever had a drinking problem in past? Yes / No Date of last drink:___________
Before quitting, number of days per week that patient drank:____________
Before quitting, number of drinks patient had on a typical drinking day:____________
Is patient currently involved in counseling or support group for alcohol use? Yes / No

Drugs (other than alcohol)
Does patient use drugs other than alcohol currently? Yes / No
- Drug most often used currently: Opiates / Stimulants / Benzodiazepines / Marijuana / Other:_______
- Other drugs used currently: □ Opiates □ Stimulants □ Benzos □ Marijuana □ Other:___________
- Does patient ever inject drugs? Yes / No
If non-drug user, has patient ever had a problem with drugs other than alcohol? Yes / No Last use:______
Before quitting, drug most often used: Opiates / Stimulants / Benzos / Marijuana / Other:
Before quitting, other drugs used: □ Opiates □ Stimulants □ Benzos □ Marijuana □ Other:
Is patient currently involved in counseling or support group for drug use other than alcohol use? Yes / No
Has patient ever smoked cigarettes? Yes / No; Current Smoker? Yes / No Date of last use:___________

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HCV Screening/Initial Presentation  p. 3 of 3

Drug-Related Allergies: ______________________

Current Medications: (Please include dosage)

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Current Vital Signs – Date of Encounter: ______________________

<table>
<thead>
<tr>
<th>Temp</th>
<th>BP</th>
<th>PR</th>
<th>Resp</th>
<th>Height</th>
<th>Wt</th>
<th>BMI</th>
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</table>

Physical Exam

Dentition: Not Examined / Normal / Abnormal ______________________

Cardiac: Not Examined / Normal / Abnormal ______________________

Pulmonary: Not Examined / Normal / Abnormal ______________________

Abdomen: □ Ascites □ Hepatomegaly □ Splenomegaly

Skin: □ Spider angiomata □ Jaundice □ Rash □ Edema

Other abnormal findings:

Imaging

<table>
<thead>
<tr>
<th>Type</th>
<th>Date</th>
<th>Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ultrasound/C/CT/MRI</td>
<td></td>
<td>Normal / Hepatomegaly / Liver Mass / Splenomegaly / Consistent with fatty infiltration / Ascites</td>
</tr>
<tr>
<td></td>
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</tbody>
</table>

Current Labs - Date of Draw: ______________________

<table>
<thead>
<tr>
<th>WBC</th>
<th>ALT (SGPT)</th>
<th>AFP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Neuts</td>
<td>AST (SGOT)</td>
<td>ANA</td>
</tr>
<tr>
<td>ANC</td>
<td>Alk Phos</td>
<td>Cholesterol</td>
</tr>
<tr>
<td>HGB</td>
<td>T. Bill</td>
<td>Fe</td>
</tr>
<tr>
<td>HCT</td>
<td>Total Prot</td>
<td>TIBC</td>
</tr>
<tr>
<td>Platelets</td>
<td>Albumin</td>
<td>Ferritin</td>
</tr>
<tr>
<td>Creatinine</td>
<td>Protine</td>
<td>HIV Ab</td>
</tr>
<tr>
<td>Glucose</td>
<td>INR</td>
<td>Vitamin D 25-OH</td>
</tr>
<tr>
<td>Uric Acid</td>
<td>HCV Genotype</td>
<td>Other</td>
</tr>
<tr>
<td>TSH</td>
<td>HCV Viral Load</td>
<td>Other</td>
</tr>
</tbody>
</table>

Proposed Treatment Plan


ECHO Fax: 505-272-6906       HCV Clinic Coordinator: 505-925-7754

rev. 04/05/2013
# Patient Health Questionnaire (PHQ-9)

**NAME:** ___________________________  **DATE:** ___________________________

Over the last 2 weeks, how often have you been bothered by any of the following problems? (use "X" to indicate your answer)

<table>
<thead>
<tr>
<th></th>
<th>Not at all</th>
<th>Several days</th>
<th>More than half the days</th>
<th>Nearly every day</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Little interest or pleasure in doing things</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>2. Feeling down, depressed, or hopeless</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>3. Trouble falling or staying asleep, or sleeping too much</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>4. Feeling tired or having little energy</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>5. Poor appetite or overeating</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>6. Feeling bad about yourself – or that you are a failure or have let yourself or your family down</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>7. Trouble concentrating on things, such as reading the newspaper or watching television</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>8. Moving or speaking so slowly that other people could have noticed. Or the opposite – being so fidgety or restless that you have been moving around a lot more than usual</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>9. Thoughts that you would be better off dead, or of hurting yourself</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>

Add columns: __________ + __________ + __________ = __________

(Healthcare professional: For interpretation of TOTAL, please refer to accompanying scoring card.)

**TOTAL:** _______________________

**10. If you checked off any problems, how difficult have these problems made it for you to do your work, take care of things at home, or get along with other people?**

- Not difficult at all
- Somewhat difficult
- Very difficult
- Extremely difficult
Summary of changes:

Patients who are cirrhotic and are anticipated to start on boceprevir should have the results of their viral load at week 4 before starting boceprevir.

Patients who have a less than 2 log decline in viral load should be advised that the likelihood for SVR is <20% and that it may be advisable to stop treatment in anticipation of new therapies expected in December 2013 which will have a higher cure rate and shorter duration of therapy.
Project ECHO® (Extension for Community Healthcare Outcomes)

To Whom it May Concern:

For patients with hepatitis C virus (HCV) genotype 1 and compensated cirrhosis, there are currently no FDA approved safe therapeutic options that do not include peginterferon. Many patients cannot be treated with peginterferon, due to medical contraindications or psychiatric contraindications. In addition, triple therapy with peginterferon, ribavirin and an HCV protease inhibitor is poorly tolerated in patients with advanced liver disease. The French CUPIC trial reported that 40 percent of participants experienced serious adverse events in the first 16 weeks of treatment; ultimately, ~40 percent were cured. Even a low albumin or low platelet count signaled a high risk of liver decompensation, infection or death in the CUPIC study.¹²

Patients with cirrhosis are at risk for progression to liver failure or hepatocellular carcinoma, liver transplant or death. These complications of liver disease are conditions that are very expensive to treat. A recent analysis of health care costs associated with hepatocellular carcinoma reported a 5-year aggregate net cost of care ranging from $83 to $130 million dollars.³ The average cost of liver transplantation is $452,600 and it increases to nearly $600,000 in patients with more serious illness.⁴

Being cured from HCV significantly reduces the incidence of transplantation, hepatocellular carcinoma and liver-related death.⁵⁶ As HCV treatment becomes more effective, the number needed to treat (NNT) to prevent death or disease progression has declined. With a 2 percent cure rate, the NNT is 1,052 to avert a single death, but a 50 percent cure rate drops the NNT to 43.⁷ Now, regimens are curing >90 percent of people with HCV in clinical trials with an estimated calculation for NNT to be much less than 43.

In the COSMOS trial, 12 weeks of Simeprevir (Olysio, Janssen) and sofosbuvir (Solvadi, Gilead) cured over 95 percent of people with HCV genotype 1 and compensated cirrhosis, regardless of their treatment history.⁸ In contrast, only 37 percent of genotype 1 patients with advanced liver disease were cured by peginterferon, ribavirin and telaprevir; cost-per-cure (inclusive of adverse event management and provider fees) was $256,977.⁹ The existing evidence supports combining Olysio and Solvadi as the most effective and safest treatment option for HCV genotype 1 patients with compensated cirrhosis.
Benefits to Rural Clinicians

• Access to consultation and mentoring from hepatology, psychiatry, infectious disease, addiction medicine, pharmacy, and patient education specialists
  • De-monopolization of knowledge
• Interaction and collaboration with colleagues with similar professional interests
  • Reduced isolation with improved professional satisfaction
• No cost CMEs and Nursing CEUs
• A mix of work and learning
How well has the model worked?

- >500 HCV TeleECHO™ Clinics have been conducted
- >5,000 patients entered HCV disease management program

**CME’s/CE’s issued:**
- Total CME hours 57,000 hours at no cost for HCV and 12 other disease areas
**Project ECHO® Clinicians**

**HCV Knowledge Skills and Abilities (Self-Efficacy)**

scale: 1 = none or no skill at all 7= expert-can teach others

<table>
<thead>
<tr>
<th>Community Clinicians N=25</th>
<th>BEFORE Participation MEAN (SD)</th>
<th>TODAY MEAN (SD)</th>
<th>Paired Difference (p-value) MEAN (SD)</th>
<th>Effect Size for the change</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1. Ability to identify suitable candidates for treatment for HCV.</strong></td>
<td>2.8 (1.2)</td>
<td>5.6 (0.8)</td>
<td>2.8 (1.2) (&lt;0.0001)</td>
<td>2.4</td>
</tr>
<tr>
<td><strong>2. Ability to assess severity of liver disease in patients with HCV.</strong></td>
<td>3.2 (1.2)</td>
<td>5.5 (0.9)</td>
<td>2.3 (1.1) (&lt; 0.0001)</td>
<td>2.1</td>
</tr>
<tr>
<td><strong>3. Ability to treat HCV patients and manage side effects.</strong></td>
<td>2.0 (1.1)</td>
<td>5.2 (0.8)</td>
<td>3.2 (1.2) (&lt;0.0001)</td>
<td>2.6</td>
</tr>
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(continued)
## Project ECHO® Clinicians

### HCV Knowledge Skills and Abilities (Self-Efficacy)

<table>
<thead>
<tr>
<th>Community Clinicians N=25</th>
<th>BEFOrE Participation MEAN (SD)</th>
<th>TODAY MEAN (SD)</th>
<th>Paired Difference (p-value) MEAN (SD)</th>
<th>Effect Size for the change</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>4.</strong> Ability to assess and manage psychiatric co-morbidities in patients with hepatitis C.</td>
<td>2.6 (1.2)</td>
<td>5.1 (1.0)</td>
<td>2.4 (1.3) (&lt;0.0001)</td>
<td>1.9</td>
</tr>
<tr>
<td><strong>5.</strong> Serve as local consultant within my clinic and in my area for HCV questions and issues.</td>
<td>2.4 (1.2)</td>
<td>5.6 (0.9)</td>
<td>3.3 (1.2) (&lt;0.0001)</td>
<td>2.8</td>
</tr>
<tr>
<td><strong>6.</strong> Ability to educate and motivate HCV patients.</td>
<td>3.0 (1.1)</td>
<td>5.7 (0.6)</td>
<td>2.7 (1.1) (&lt;0.0001)</td>
<td>2.4</td>
</tr>
</tbody>
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(continued)
### Project ECHO® Clinicians

**HCV Knowledge Skills and Abilities (Self-Efficacy)**

<table>
<thead>
<tr>
<th>Community Clinicians N=25</th>
<th>BEFORE Participation MEAN (SD)</th>
<th>TODAY MEAN (SD)</th>
<th>Paired Difference (p-value) MEAN (SD)</th>
<th>Effect Size for the change</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Overall Competence (average of 9 items)</strong></td>
<td>2.8* (0.9)</td>
<td>5.5* (0.6)</td>
<td>2.7 (0.9) (&lt;0.0001)</td>
<td>2.9</td>
</tr>
</tbody>
</table>

Cronbach’s alpha for the BEFORE ratings = 0.92 and Cronbach’s alpha for the TODAY ratings = 0.86 indicating a high degree of consistency in the ratings on the 9 items.

## Clinician Benefits
(Data Source; 6 month Q-5/2008)

<table>
<thead>
<tr>
<th>Benefits</th>
<th>Not/Minor Benefits</th>
<th>Moderate/Major Benefits</th>
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<tbody>
<tr>
<td>Enhanced knowledge about management and treatment of HCV patients.</td>
<td>3% (1)</td>
<td>97% (34)</td>
</tr>
<tr>
<td>Being well-informed about symptoms of HCV patients in treatment.</td>
<td>6% (2)</td>
<td>94% (33)</td>
</tr>
<tr>
<td>Achieving competence in caring for HCV patients.</td>
<td>3% (1)</td>
<td>98% (34)</td>
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### Project ECHO®
#### Annual Meeting Survey

<table>
<thead>
<tr>
<th></th>
<th>N=17</th>
<th>Mean Score (Range 1-5)</th>
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<tr>
<td>Project ECHO® has diminished my professional isolation.</td>
<td></td>
<td>4.3</td>
</tr>
<tr>
<td>My participation in Project ECHO® has enhanced my professional satisfaction.</td>
<td></td>
<td>4.8</td>
</tr>
<tr>
<td>Collaboration among agencies in Project ECHO® is a benefit to my clinic.</td>
<td></td>
<td>4.9</td>
</tr>
<tr>
<td>Project ECHO® has expanded access to HCV treatment for patients in our community.</td>
<td></td>
<td>4.9</td>
</tr>
<tr>
<td>Access, <strong>in general</strong>, to specialist expertise and consultation is a major area of need for you and your clinic.</td>
<td></td>
<td>4.9</td>
</tr>
<tr>
<td>Access to <strong>HCV specialist</strong> expertise and consultation is a major area of need for you and your clinic.</td>
<td></td>
<td>4.9</td>
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The Hepatitis C Trial

September 2006-August 2008
Objectives

• To train primary care clinicians in rural areas and prisons to deliver Hepatitis C care and treatment to rural populations of New Mexico

• To show that such care is as safe and effective as that given in a university specialty clinic

• To show that Project ECHO® improves access to Hepatitis C care for minorities
Hepatitis C

Participants

• Study sites
  ▪ Intervention (ECHO)
    ➢ Community-based clinics: 16
    ➢ New Mexico Department of Corrections: 5
  ▪ Control: University of New Mexico (UNM) Liver Clinic

• Subjects meeting inclusion/exclusion criteria
  ▪ Community cases seen by primary care physicians [N=261]
  ▪ Consecutive University patients [N=146]
Principle Endpoint - Cure

Sustained Viral Response (SVR): no detectable HCV virus 6 months after completion of treatment
Outcomes of Treatment for Hepatitis C Virus Infection by Primary Care Providers

Sanjeev Arora, M.D., Karla Thornton, M.D., Glen Murata, M.D., Paulina Deming, Pharm.D., Summers Kalishman, Ph.D., Denise Dion, Ph.D., Brooke Parish, M.D., Thomas Burke, B.S., Wesley Pak, M.B.A., Jeffrey Dunkelberg, M.D., Martin Kistin, M.D., John Brown, M.A., Steven Jenikusky, M.D., Miriam Komaromy, M.D., and Clifford Qualls, Ph.D.

ABSTRACT

BACKGROUND

The Extension for Community Healthcare Outcomes (ECHO) model was developed to improve access to care for underserved populations with complex health problems such as hepatitis C virus (HCV) infection. With the use of video-conferencing technology, the ECHO program trains primary care providers to treat complex diseases.

METHODS

We conducted a prospective cohort study comparing treatment for HCV infection at the University of New Mexico (UNM) HCV clinic with treatment by primary care clinicians at 21 ECHO sites in rural areas and prisons in New Mexico. A total of 407 patients with chronic HCV infection who had received no previous treatment for the infection were enrolled. The primary end point was a sustained virologic response.

RESULTS

A total of 57.5% of the patients treated at the UNM HCV clinic (84 of 146 patients) and 58.2% of those treated at ECHO sites (152 of 261 patients) had a sustained viral response (difference in rates between sites, 0.7 percentage points; 95% confidence interval, −9.2 to 10.7; P = 0.89). Among patients with HCV genotype 1 infection, the rate of sustained viral response was 45.8% (38 of 83 patients) at the UNM HCV clinic and 49.2% (7 of 147 patients) at ECHO sites (P = 0.57). Serious adverse events occurred in 15.7% of the patients at the UNM HCV clinic and in 6.9% of the patients at ECHO sites.

CONCLUSIONS

The results of this study show that the ECHO model is an effective way to treat HCV infection in underserved communities. Implementation of this model would allow other states and nations to treat a greater number of patients infected with HCV than they are currently able to treat.

From the Department of Internal Medicine (S.A., K.T., G.M., P.D., S.K., D.D., B.P., T.B., W.P., M. Kistin, J.B., M. Komaromy) and the Clinical and Translational Science Center (C.T.S.), University of New Mexico; and Presbyterian Healthcare Services, Adult and Geriatric Behavioral Health Clinic (S.J.)—both in Albuquerque; and the Department of Internal Medicine, University of Iowa, Iowa City (J.D.). Address reprint requests to Dr. Arora at Project ECHO, 1 University of New Mexico, MSC07-4245, Albuquerque, NM 87131; or at sarora@salud.unm.edu.

This article (10.1056/NEJMoa1008370) was published on June 9, 2011, at NEJM.org.

# Treatment Outcomes

<table>
<thead>
<tr>
<th>Outcome</th>
<th>ECHO</th>
<th>UNMH</th>
<th>P-value</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>N=261</td>
<td>N=146</td>
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<td>49%</td>
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<td>SVR* (Cure) Genotype 2/3</td>
<td>70%</td>
<td>71%</td>
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*SVR=sustained viral response

RESULTS
A total of 57.5% of the patients treated at the UNM HCV clinic (84 of 146 patients) and 58.2% of those treated at ECHO sites (152 of 261 patients) had a sustained viral response (difference in rates between sites, 0.7 percentage points; 95% confidence interval, −9.2 to 10.7; P=0.89). Among patients with HCV genotype 1 infection, the rate of sustained viral response was 45.8% (38 of 83 patients) at the UNM HCV clinic and 49.7% (73 of 147 patients) at ECHO sites (P=0.57). Serious adverse events occurred in 13.7% of the patients at the UNM HCV clinic and in 6.9% of the patients at ECHO sites.

CONCLUSIONS
The results of this study show that the ECHO model is an effective way to treat HCV infection in underserved communities. Implementation of this model would allow other states and nations to treat a greater number of patients infected with HCV than they are currently able to treat. (Funded by the Agency for Healthcare Research and Quality and others.)
Conclusions

• Rural primary care clinicians deliver hepatitis C care under the aegis of Project ECHO® that is as safe and effective as that given in a university clinic.

• Project ECHO® improves access to Hepatitis C care for New Mexico minorities.
Project ECHO Expansion
Disease Selection

• Common diseases
• Management is complex
• Evolving treatments and medicines
• High societal impact (health and economic)
• Untreated disease has serious adverse outcomes
• Improved outcomes with disease management
• Eg. HCV, HIV, TB, rheumatologic diseases, neurologic diseases, pain management, CHF, etc.
Bridge Building

Pareto Principle

UNM HSC

State Health Dept

Private Practice

Community Health Centers

HIV

Rheumatoid Arthritis + Rheumatology Consultation

Chronic Pain
Force Multiplier
Chronic Disease Management is a Multidisciplinary Team Sport

Primary Care Provider  Nurse  Pharmacist  Community Health Worker

Diabetes and Cardiac Risk Reduction

Asthma and COPD

Substance Use and Mental Health Disorders
## Successful Expansion into Multiple Diseases

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<th>Mon</th>
<th>Tue</th>
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<td>Integrated Addictions &amp; Psychiatry</td>
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<td>Prison Peer Educator Training</td>
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US ECHO Replication and Collaboration:

- **University of Washington** (HCV, Chronic Pain, HIV, Addiction)
- **Harvard, Beth Israel Deaconess Medical Center** (HCV, Gerontology – ECHO AGE)
- **University of Chicago** (Hypertension, Breast Cancer, ADHD, Childhood Obesity)
- **University of Nevada** (Diabetes/Cardiovascular Risk Reduction, Sports Medicine, Thyroid & Diabetes, Antibiotic Stewardship, Mental Health)
- **University of Utah** (HCV)
- **University of South Florida, ETAC and Florida/Caribbean, AETC** (General HIV, Adolescents/Pediatrics HIV, HCV/HIC Co-Infection, Psychiatry & HIV, Spanish Language HIV)
- **US Department of Defense** — Worldwide Initiative (Chronic Pain)
- **US Veteran’s Administration Health System** — 11 Regions (Chronic Pain, Diabetes, Heart Failure, HCV, Women’s Health, Nephrology)
- **US Indian Health Service** (HCV and HIV)
- **St Joseph Hospital and Medical Center** — Arizona (HCV)
- **Community Health Center, Inc.** — Connecticut (HIV, HCV, Chronic Pain)
- **LA Net** (Nephrology, Adult Psychiatry)
Global ECHO Replication and Collaboration:

- India: Maulana Azad Medical College
- India: Institute of Livery and Biliary Sciences
- Uruguay: Universidad de la Republica
- Northern Ireland: Northern Ireland Hospice (Belfast, NI)
- Northern Ireland: Government of Northern Ireland (Belfast, NI)*
- Ireland: Royal College of Surgeons Ireland (Dublin, Ireland)
- Ireland: West/Northwest Hospitals Group (Galway, Ireland)
- India: Manipal University (Manipal, India)
- Canada: Queens University & University of Toronto (Toronto, Canada)
- India: National Institute for Mental Health Services (Bangalore, India)
- Mexico: PACE (San Miguel de Allende, Mexico)
- Vietnam: National Lung Hospital (Hanoi, Vietnam)
Navajo Area IHS/NMAETC ECHO - HIV/AIDS
January 8, 2014
Indian Health Service
Project ECHO
2nd Wed of the Month from 12:00 PM to 1:00 PM MDT

TEL: 1-877-746-4263 / CODE: 0294366# / IP: 64.234.191.5##5000

The next monthly IHS/NMAETC HIV ECHO will be held on:

Wednesday, February 12th, 2014

Please join us on Wednesday, January 8, 2014 from 12:00 PM - 1:00 PM when Joel Gallant, MD - Southwest CARE Center presents "IDSA HIV Primary Care Guidelines."

Link: IDSA HIV Primary Care Guidelines (ppt)
Link: IDSA Primary Care Guidelines for Management of HIV

Link: Syphilis in HIV.ppt
Link: Meeting Agenda
Link: Case Presentation [AG]
Link: Case Presentation [AL]
ANNOUNCEMENTS

1. CME Credit. You may now receive 1 AMA Category 1 credit per hour of participation in the IHS/NMAETC HIV ECHO monthly clinic. To receive credit, you must fax the CME Sign-in Sheet and completed Evaluation form to 505-272-4767.

Link: Clinic Sign In Sheet
Link: NMAETC PIF & QOP Evaluation Form (pdf)
Link: Link to electronic PIF

CONNECTION INFORMATION

To Connect by Video
Please enter IP address: 64.234.191.S##5000 into your videoconferencing system.

Important note: Video participation is highly encouraged and recommended. If you have a computer (or tablet device) with a web cam and internet connection, ECHO can help you get set up. Please contact ECHO tech support at 1-505-750-4897 to schedule a phone appointment to upload/text the videoconferencing software.

To Connect by Audio Only
Please dial 1-877-746-4263, and enter participant code: 0294366 when prompted.

If you have difficulty reaching ECHO tech support, please feel free to contact the Program Coordinator Lisa Sullivan, at 505-697-1386 or lsully12@salud.unm.edu.

PRESENTING A PATIENT CASE

We welcome patient cases for consultation with our multidisciplinary team of HIV specialists.

If you would like to present a case, please contact Lisa Sullivan to see if there is an available time slot on the agenda. To prepare for your case, we ask that you complete a presentation template form (initial or follow up) and fax it to 505-272-4767. You may include any other pertinent patient records including lab reports, relevant MD notes, etc.

Link: Initial Presentation Form (pdf)
Link: ECHO ID Form (pdf)
# Plans and Pricing

Contact [Sales](tel:+1.888.799.9666)

### Basic
- **Free**
  - Sign Up Now
  - 1 to 1 meetings: Unlimited
  - Number of meetings: Unlimited
  - Group meeting duration: 40 minutes per meeting

### Pro
- **Pricing**
  - up to 25 participants join free
  - up to 100 participants join free
  - up to 100 participants join free
- **As low as**
  - $9.99/mo
  - $49.99/mo

### Business
- **minimum 10 Pro**
  - participants join free
  - as low as
  - up to 25
  - up to 100
  - up to 100

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**Molina Patient?** ☐ Yes  ☑ No  

**New Case** ☐  **Follow up** ☑

**Reason for Case Presentation**: New diagnosis of HIV w/ Lues Maligna

<table>
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<tr>
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<th>Presentation Date</th>
<th>Echo ID</th>
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<td>Alithea Gabrellos</td>
<td>1/1/14</td>
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**General Information**
- **Age**: 42  
- **Gender**: M  
- **Date of HIV Dx**: 9/24/12  
- **Nadir CD4 (if known)**: 1253  
- **Current CD4**: 1253  
- **Current HIV RNA**: 66,759

**Medical & Psychiatric History**
- 42 yo M previously healthy male presented to UNM 8/2013 with Lues. Treated w/ ceftriaxone. Treated w/ Syphilis. Developed severe body dizziness/weakness.
- Presented to ED. Treated w/ Penicillin due to recent syphilis.

**ARV History**
- Recently started Atazanavir 1/2014

**Pertinent Social History**
- Denies ETOH, drug use, smoking. Unemployed. Lives alone. Recently learned significant other was working as a prostitute.

**Adverse Med Reactions**
- No rashes at time of presentation.

**Current Meds**
- None.

**Pertinent Physical Findings**
- Severe body dizziness/risk involving paresthesia.

**Pertinent Labs**
- **RPR**: 1/25G 9/24/13 → NR 11/1/13 still weak POS x 3
- **HCV Ab**: VL 0  
  GC/chlamydia neg  
  LP unremarkable  
  FTA-ABS reactive

*Revised 03/12*
We look forward to having you join us. Please let us know if you have any questions. Thank you!

Sincerely,

Karla Thornton, MD, MPH
Associate Director - Project ECHO
University of New Mexico Health Sciences Center

Michelle Landiorio, MD
Associate Professor
Department of Internal Medicine
Director, NMAETC

Jonathan Vilasier Iralu, MD, FACP
Indian Health Services Chief Clinical Consultant for Infectious Disease
Gallup Indian Medical Center/Navajo Area Indian Health Service

Sonya Shin, MD, MPH
Infectious Disease Consultant
Gallup Indian Medical Center/Navajo Area Indian Health Service
Brigham and Women’s Hospital/Harvard Medical School

Bruce Struminger, MD, MA
Navajo Area Indian Health Service
Four Corner Regional Health Center

Brigg Reilley, MPH
IHS National Programs HIV/AIDS
The IHS-UNM Project ECHO HCV Network will offer group members the opportunity to share ideas, documents, and discussion about issues related to expansion of HCV screening, care and treatment across Indian Country. We hope this online discussion forum and the live monthly video/teleconferences prove useful and fun. Yours, Bruce, Brigg, & Karla

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</table>
Potential Benefits of ECHO Model™ to Health Systems

- Create learning communities among health care professionals promoting collaboration between [academic and non-academic] specialists and primary care providers – de-monopolize knowledge
- Build human workforce capacity via clinical mentoring to promote development of local expertise
- Promote practice-based learning via collaborative pedagogy
- Disseminate evidence-based best practices
- Reduce variations in care through promotion of protocol driven care and treatment
- Improve Quality and Safety of health care delivered in rural and underserved communities
- Improve professional satisfaction and reduce professional isolation
- Expand access to specialty care for rural and underserved patients, reducing disparities
- Develop multi-disciplinary team capacity to treat patients locally, improving patient satisfaction
- Promote cost-effective care – avoid unnecessary repeat testing and expensive travel
- Prevent high cost of untreated disease (e.g.: liver transplant or dialysis)
- Integration of public health perspectives into treatment paradigms
Interactive Tutorial

Routine HIV Screening in Health Care Settings

In 2006, the CDC issued new recommendations on routine HIV screening in health care settings. Click here to start our new interactive tutorial that provides an in-depth look at multiple aspects of routine HIV screening. This tutorial provides 1.5 hours of free CME and CNE credit.

New Cases

Methicillin-Resistant *Staphylococcus aureus* (MRSA) Skin and Soft Tissue Infections

In the past decade, MRSA has emerged as a prominent cause of community-acquired skin and soft tissue infections. This case discussed the mechanisms of antimicrobial resistance, clinical manifestations and approach to different types of skin and soft tissue infections in which MRSA may be involved. New IDSA guidelines for the management and decontamination of MRSA are reviewed.

Cryptosporidiosis in a Patient with AIDS

Cryptosporidium infection in HIV-infected persons with advanced immunosuppression can cause debilitating diarrhea. This case provides an overview of the clinical manifestations, appropriate diagnostic tests, and management of HIV-infected patients with cryptosporidiosis.
Hepatitis Web Study

Featuring
Interactive, case-based modules with free CE credits
Slide library with presentations for downloading
A glossary of definitions and terms
**Featured Cases**

**Management of Treatment-Naïve Genotypes 2 and 3 HCV Infection**
Genotypes 2 and 3 are distinct from the other genotypes of HCV infection, genotype 1 in particular, for their more favorable response to treatment with peginterferon and ribavirin. This case will review the current treatment of genotypes 2 and 3, as well as provide some background on clinical factors that may influence the management of these patients.

**Medications Used in Hepatitis C Treatment**
Treatment of hepatitis C currently involves a combination of peginterferon and ribavirin with or without one of the HCV protease inhibitors, telaprevir or boceprevir. This case reviews the appropriate use of these medications as well as the mechanism of action and common adverse effects of each agent.

**Virologic Responses during Treatment of Hepatitis C**
Understanding virologic responses during and after treatment of hepatitis C is an important component of hepatitis C management. This case reviews the array of terms used to describe virologic responses during treatment, at the end of treatment, and post-treatment.

**Pre-treatment Considerations for Chronic Hepatitis C Virus Infection**
The decision to initiate treatment for hepatitis C virus infection is influenced by the likelihood of success, the need for treatment related to the rate and stage of liver disease progression, and the treatment efficacy and risks for the individual patient. This case features a discussion of baseline viral and host factors that predict treatment response.

**Diagnosis of Hepatitis C Virus Infection**
The laboratory tests used to diagnose hepatitis C virus (HCV) infection consist of serologic assays that detect human antibodies against HCV and molecular assays that detect viral nucleic acid. This case reviews HCV diagnostic tests and the general algorithm for diagnosing HCV, including different testing strategies related to the pre-test probability of infection.

**Initiating Treatment in Patients with Hepatitis B and HIV Coinfection**
Individuals coinfected with HBV and HIV are more likely to experience liver-related morbidity and mortality than those infected with HBV alone. This case discusses the goals of treatment and the unique issues surrounding initiating antiviral therapy in HBV-HIV-infected persons.
Hepatitis C Online Course

Welcome to this self-study, interactive course on Hepatitis C infection. The content is intended for medical providers and will consist of 6 Modules. At this time, Modules 1, 2, 3, and 4 are active; additional Modules will be posted as they are completed. The project is brought to you from the University of Washington and includes a collaboration with the International Antiviral Society-USA (IAS-USA). Free CME credit and free CNE credit are offered throughout the site.

Funded by a grant from the Centers for Disease Control and Prevention

Take Online Course
- Track your progress
- Get started now
- Continue at your leisure

1. Screening and Diagnosis of Hepatitis C Infection
   5 Lessons

2. Evaluation, Staging, and Monitoring of Chronic Hepatitis C
   7 Lessons

3. Management of Cirrhosis-Related Complications
   5 Lessons

4. Evaluation and Preparation for Hepatitis C Treatment
   5 Lessons

Browse Course Materials
- Written Core Concepts
- Slide Lectures
- Bibliography

1. Screening and Diagnosis of Hepatitis C Infection
   5 Written Core Concepts; 5 Slide Lectures

2. Evaluation, Staging, and Monitoring of Chronic Hepatitis C
   7 Written Core Concepts; 7 Slide Lectures

3. Management of Cirrhosis-Related Complications
   5 Written Core Concepts; 5 Slide Lectures

4. Evaluation and Preparation for Hepatitis C Treatment
   5 Written Core Concepts; 5 Slide Lectures

Progress Tracker

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Principal Funding:

Robert Wood Johnson Foundation
HHS/Centers for Medicare and Medicaid Services (CMS)
State of New Mexico Legislature
HHS/Centers for Disease Control and Prevention (CDC)
US Department of Defense
GE Foundation
Helmsley Foundation
Conclusion:
The ECHO knowledge network model

- multipoint videoconferencing
- best practice protocols
- case-based learning and mentoring
- co-management of patients

is a robust method to safely and effectively treat common, complex diseases in rural and underserved communities and to monitor outcomes.
With a mission to strengthen the practice of public health nutrition across the western states, the Western MCH NLN:

• Provides leadership training and support
• Provides technical assistance
• Provides opportunities for collaborative learning

• Do you think the ECHO model could help the Western MCH NLN to better achieve its Mission, particularly as it relates to training and technical assistance and collaborative learning?
• How might you imagine the ECHO model might be adapted to the needs of the Western MCH Nutritional Leadership Network?
Possible follow up steps:

- ECHO Introduction – 90 min monthly video introduction
  - Tuesday April 15 from 08:30-10:00 MDT [virtual]
- ECHO Orientation – full day monthly orientation
  - Wednesday April 16 and May 14 from 8:00-17:30 [in person]
  - [http://echo.unm.edu/orientation.html](http://echo.unm.edu/orientation.html)
- Observe a regularly scheduled ECHO clinic, preferably tuning in by video
- More info at:
  - [http://echo.unm.edu](http://echo.unm.edu)
Sanjeev Arora MD

Distinguished Professor of Medicine
(Gastroenterology/Hepatology)
Director of Project ECHO®
Department of Medicine
University of New Mexico Health Sciences Center

Tel: 505-272-2808
Fax: 505-272-6906
sarora@salud.unm.edu

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bstruminger@unm.edu